# THE MARINE RECORD.

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To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and im rove the character of the service rendered to the public.

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### THE COLUMBIAN GUNBOAT.

Further particulars of the gunboat which Hugh Ramsey, of Perth Amboy, N. J., referred to in last week's RECORD, in the following article from the New York Maritime Register:

That American ship yards offer the latest opportunities for all kinds of war vessels is now very well known and every sign that this is appreciated abroad is welcome. An indication of this belief is found in the order which Mr. Hugh Ramsey, the shipbuilder, of Perth Amboy, N. J., has received from the Columbian government. This contract calls for a side wheel gun-boat, to be ready for transportation on Jan. 1.

It is stipulated in the contract that the gun-boat shall be completed in four months and that it shall be shipped to the United States of Columbia in sections, the reconstruction and fitting out to be done by that government. Despatch and torpedo boats have been built in sections, both here and abroad and shipped away but these boats so constructed have been small and the transportation in sections of the new gunboat, which is to be 140 feet long, will, according to Mr. Ramsey, be an unusual one. The gunboat will be put together at the yard with screw bolts, which will permit of breaking her up without injury to her frame or plates.

The new vessel will be a side-wheel steel gun-boat to be used for river service. She will have a speed of fifteen knots and a draught of only 3 feet 3 inches. When completed her dimensions will be: Length over all, 140 feet; beam, over guards, 35 feet; at the water line, 19 feet, and depths of hold, 7 feet. She will have a military mast, on which will be mounted a machine gun and steel-covered conning tower. On the latter will be a powerful search light.

The engine and boiler rooms will be protected with quarter-inch bullet-proof nickel steel. The deck house will have, instead of widows, steel sliding panels, from behind which the crew can fire without being exposed. The hull will be divided into ten water-tight compartments, the saloon and staterooms being aft. She will have inclined triple-expansion engines, the cylinders of which will measure 12¾, 20½ and 31¾ inches, with a thirty-nine-inch stroke. Her propelling power will be furnished by feathering paddle wheels nine by three feet in diamter. Her armament will consist of three rapid firing machine guns, mounted fore, aft, and on the military mast. She will be built to burn wood, her fuel capacity being small, as she will, it is expected, always be able to obtain fuel all along the rivers.

When completed the gunboat will cost in the neighborhood of $125,000.

### NEW RUSSIAN IMPERIAL YACHT.

This, it is said, will be the largest yacht ever constructed, and was to be launched on the Czar's birthday. It will be of 5,300 tons, while the length is 430 feet. Pole Star, the present imperial yacht, is 2,000 tons less, and is only 350 feet long. The new yacht has engines of 12,000 I. H. P., to give a speed of 20 knots at sea, while the old yacht had engines of only 6,000 I. H. P. The new yacht, too, will have Belleville water-tube boilers. The keel plate was laid in the summer of last year by the late Czar, and the cost is put at £400,000. She is named Standard, and will have a complement of 370 officers and men.

### NEW PATENTS.

Following is a list of new patents which have been recently awarded on inventions bearing on navigation, marine trade and relative matters:

545,706. Paddle, Peder K. Mannes, St. Paul, Minn. Filed June 12, 1895. Serial No. 552,549. (No model.)

545,760. Line-clamp. George K. Ashley, Washington, D. C. Filed Oct. 24, 1891. Serial No. 409,684. (No model.)

545,761. Metallic Rod-packing, James L. Barker, Minneapolis Minn., assignor of one-third to James MacGowen, same place. Filed June 3, 1895. Serial No. 551,457. (No model.)

545,762. Dredger. Lindon W. Bates, Chicago, Ill. Filed March 4, 1895. Serial No, 540,525. (No model.)

A full description of these patents can be obtained by sending to the Patent Office, Washington, 14 cents for each, and mentioning THE MARINE RECORD.

### WORK ON NAVAL VESSELS.

There continues to be great activity on the part of the Navy Department in the matter of ship construction. Since his return from his inspection trip, Secretary Herbert has been giving close attention to this matter. He has discussed with his chief of bureaus the ways and means for hurrying on the work, and as a result, it is expected that there will be a great deal of activity displayed during the fall. The Secretary's desire for haste is the result of his recent thorough inspection of the navy yards of the North Atlantic coast, and is due to his anxiety to make a good showing in his coming annual report to Congress. The cost of keeping the Oregon at the Union Iron Works is something like $1,500 a month. Work on this vessel has practically stopped. While on his tour the secretary inspected the work on the Puritan and Terror, and since his return he has given directions looking to the early completion of these vessels. There are at present four battleships under construction, one of which, the Indiana, will shortly undergo her official trial. There is one armored cruiser, the Brooklyn, building four monitors, one harbor-defense ram, with which the Bath Iron Works is experimenting in order to obtain from her the speed required by her contract; three light-draught gunboats and three torpedo boats. This list will shortly be increased by three torpedo boats, six gunboats and two battleships. The three gunboats building at Newport News will also be pushed toward completion. The authorities are anxious to have vessels of their small displacement in Chinese waters so that they may be sent into the rivers of the Celestial Empire and give protection to Americans residing in the interior. When all the ships under construction are completed, the policy of the department will be to create a reserve fleet such as Great Britain and France have. An effort was made during the last Congress to obtain legislation on this subject, but it was unsuccessful. Under this policy all the vessels of the gunboat class will be kept in commission, and many of the cruisers. One of each of the remaining types of ships will be kept in commission so as to give practice to the officers and men and familiarize them with the workings of the different classes of ships, and the vessels will be alternated once in every three or four months in order to keep them in condition to be ready for sea at any time.—Army and Navy Journal.

### NEWLY ENROLLED TONNAGE.

Following is a list of lake vessels to which official numbers and signal letters have been assigned by the Commissioner of Navigation, for the week ended Aug. 31:

| Official No. | Rig. | Name. | TONNAGE. Gross. | Net. | Home Port. | Where Built. |
|---|---|---|---|---|---|---|
| 27,665 | St. s. | Yale | 3,453.26 | 2,698.58 | Cleveland | Cleveland |

### HYDROGRAPHIC CHARTS

Of Lakes Erie, Ontario, Superior, Huron, and St. Mary's, St. Clair and Detroit Rivers, for sale at the office of the MARINE RECORD, No. 144 Superior street, Cleveland. Prices 75 and 50 cents each.

# NEWS AROUND THE LAKES.

## CLEVELAND.

The Cleveland Yacht Club opens its beautiful new home near the Marine Hospital on Thursday afternoon, Sept. 12, with receptions, music and dancing. The club house is very handsome, and the interiors are beautifully finished. While it is altogether the proper and tasteful thing to open the club house with these festivities, the fact that under the rules the social feature will be limited and kept from interfering with the main objects of the club, is the feature that chiefly insures the club's success.

The Penn'a. Co.'s dredge Hercules has arrived from Ashtabula, and is now actually at work dredging out the slips at the new coal docks. Some cargo loading may be expected there soon.

The tug C. E. Benham has taken Smith Brothers' dredge, and the 50 feet crib work for Sandusky's new outer range light. Building the super structure will begin at once.

## CHICAGO.

*Special Correspondence to The Marine Record.*

At Miller Bros.' shipyard the steamer J. D. Marshall was in dock for some calking and repairs to her wheel; the steamer Oscoda for calking, repairs to wheel and stern bearing; the schooners W. O. Goodman and Minnie Slauson for a thorough recalking; the tug Uncle Charley and steam yacht Argo for some calking.

At J. B. Bates & Co.'s shipyard the steamer Simon Langell received considerable repairs to her stern, comprising new stanchions, covering board, bulwarks and rail and roof of after cabin; the schooner Clint received a new rudder stock; the schooner Belle Brown a new tow post; the steamer H. A. Root a new mast head, the schooner M. Dall a new center board; schooner D. L. Filer a new windlass; schooner Foster a new anchor stock; steamer Roanoke some new stanchions; schooner L. B. Sheppard a new anchor stock and cathead; schooner Transfer a new anchor stock and some calking; schooner York State a new anchor stock; schooner Peshtigo had her center board box calked and decks repaired and calked; steamer John Plankinton some deck calking; schooner C. J. Magill new timber heads; the steamers Peerless, City of Duluth, City of Traverse and Jay Gould received general repairs.

The I. Stevenson Transportation Co. sold the new barge Peshtigo to Bay City parties. She rates A1 and will carry 1,100,000 feet of lumber. She was built by the Milwaukee Ship Building Co. for the Peshtigo Lumber Co.

Palmer, Cook & Calbick chartered the steamer Toltec for oats to Buffalo at 1½c; the schooner Miztec for flaxseed to Buffalo at 2c; the steamer White Friant and schooner Lizzie A. Law for lumber, Duluth to Chicago, at $2.50 per 1,000 feet.

Carr & Blair chartered the steamer John F. Eddy for corn to Buffalo at 1¾c; the schooner Lake Forest for oats to Port Huron at 1¼c.

Capt. John Prindiville chartered the steamer Emily B. Maxwell for corn to Port Huron at 1¼c.

J. G. Keith & Co. chartered the steamer Sachem and schooner George Sturges for corn to Port Huron at 1¼c; steamer C. S. Parnell, corn to Buffalo, at 1¾c; schooner Minnie Slausen, oats to Port Huron at 1¼c; the steamer Mary A. McGregor for corn to Walkerville at 1¾c; steamer Mary H. Boyce, clipped oats to Buffalo, at 1½c.

The Standard Oil Co.'s barge No. 76 arrived at South Chicago Tuesday morning in tow of the steamer E. A. Shores, Jr. The Shores towed her at the average rate of 9½ miles per hour from Duluth to South Chicago.

Capt. George Crawford, of the steamer City of Holland, was fatally injured Sunday by being squeezed between the steamer and the dock. Some bales of wool were being unloaded and one fell into the river and the captain tried to recover it, and when between the boat and the dock the surge from some passing vessel drove the Holland towards the dock, the captain fell into the river, when the steamer receded, and was unconscious when taken out. A surgeon was sent for who said the captain was injured internally. Capt. Swails took command of the Holland and left here for Holland Sunday night. Capt. Crawford died during the night. He was aged about 45 years and leaves a widow.

The steamer J. L. Hurd has been released from the beach at Harbor Springs where she was run ashore after her collision with the steamer Cayuga. The tug Wright towed her to Manitowoc where she will receive repairs at Burger & Burger's shipyard.

The steamer St. Lawrence arrived here Tuesday morning with a cargo of wheat from Duluth.

The schooner W. O. Goodman was in dry-dock for recalking this week. She was built at Burger's shipyard, Manitowoc, in 1882, and has never been in dry-dock before. Capt. W. Johnson, her owner, says she never leaked and her floor was perfectly dry when placed in dock. He had her calked to stiffen her up some. She is a very smart sailor and upon one occasion, soon after she first came out, she beat the schooner yacht Idler on a run between the Door and Chicago, and had on a big load of lumber at the time. Capt. Thomas Hansen who was drowned recently at Manistee, brought her out and sailed her up to the time of his death.

Assistant Local Inspectors Hogan and Kehoe inspected the steamer Edwin S. Tice Monday. She has been purchased by S. Neff, of Milwaukee, from H. W. McCormick, of Buffalo.

Local Inspectors Richardson & Moore went to South Chicago Tuesday and inspected the new steel steamer Zenith City.

The whaleback steamer Christopher Columbus left here for West Superior Tuesday morning.

No more center pier bridges will be allowed to be constructed in Chicago River, marine men now say, on account of the change of plans in a new bridge, which the city will build at North Halstead street. The original plans submitted by the city to the War Department called for a four tracked bridge with a wide abutment in the center of the channel. The marine interest objected strenuously to any more center piers being placed in Chicago River, and it has apparently been sustained by the War Department, for plans of a bascule bridge with no center pier are now being drawn.

## DULUTH AND SUPERIOR.

The passenger whaleback Christopher Columbus has finished up her season on Lake Michigan. She will come to Lake Superior at once, but will carry on quite an excursion business before she lays up for the winter.

The Lehigh Valley Coal Company is experiencing the disadvantage of being located in Tower Bay slip, and it appears that the protests against this portion of the harbor on the ground of having inadequate water facilities are no myth. Supt. Barnes has been notified by his company that from now on it will be exceedingly difficult if possible, to chater steam barges for this dock on account of the objection of vesselmen to coming into the slip. The vesselmen are masters of the situation this time, and they can say about where they will go. The Lehigh Valley Company from now on will have to depend almost entirely upon consort cargoes. The great disadvantage in this is that consorts bring small cargoes as a rule. Supt. Barnes says that it costs very little more to unload 2,000 tons than 1,200, and that large cargoes are wanted every time if possible.

## PORT DOVER'S CAR FERRY DOCK.

In an extended account of the completion of the pier work and ferry slip, the Port Dover Maple Leaf says: "The quantity of timber used was 550,000 feet of pine and hemlock in about equal proportions. There was also 60,000 feet of oak and 15,000 feet of planking used. The stone required was 1,600 cords, most of which was quarried from the Marburg quarries, a few miles up Black Creek. Twenty-five tons of seven-eighth inch iron rods, cut 30 inches long, were used for spiking the timbers together. The 'spring piling' was an invention of Mr. George Sykes, the engineer in charge. It is for the purpose of preventing damage to the boat by striking the pier when arriving at the dock. In it 170 nine-inch car springs were used. Each of these springs will yield five inches, and as there are three rows of them, the whole will yield 15 inches and return to their places. This is considered an ample 'buffer' between the boat and the dock and gives, we understand, excellent satisfaction."

## SEARCH LIGHTS FOR CANALS.

A very handy portable plant is being used on vessels navigating the Manchester ship canal at night. The apparatus is practically a duplicate of that employed for lighting vessels through the Suez canal during the last twelve months. It comprises a small engine and dynamo combined, a search-light projector of the Admiralty pattern, and a mast arc lamp and reflector. The projector barrel is 20 inches in diameter, rolled out of steel sheet, all the mountings being of gun metal finished bright. The mirror is 20 inches in diameter, 10-inch focus, with a bayonet socket attachment to the barrel, so as to facilitate removal for cleaning, etc. The electrical connections are carried inside the projector, and an instrument similar to a camera is provided at one side of the projector for viewing the arc image thrown on ground glass.

## ALUMINUM IN SHIP BUILDING.

The use of aluminum in ship building has, in many cases, been simply a matter of experiment. Its utility and advantage in certain forms of service has been practically determined. In others, as in aluminum plates, there have been some grave differences of opinion with the final decision as yet unrendered. The difficulty lies in its corrosive tendencies which by some naval experts are pronounced to be excessive. This in itself would be a formidable objection to its use in this line if it were not a fact, that much has yet to be learned in its special manufacture for this particular purpose. The history of all metals tells the same story. Processes have their evolution, and their earlier stages always more or less crude and imperfect, and there can be nothing final said as to their qualities until science and experiment have rendered their decision. Aluminum is no exception to the rule. As with iron, and steel, copper and nickel, the chemist and metallurgist have not yet discovered all the secrets. Bessemer is not a finality and nickel is not yet decided as to its best virtues with this or that alloy. It is so with aluminum. In speaking of the conclusions reached by naval experts regarding the corrosive tendencies of aluminum ship plates, the consulting engineer of the company which supplied plates for the "Defender" say:

"When earlier made plates were tested by the authorities of the navy department at Norfolk, it was found that they collected barnacles and corroded, and it is from the result of those reports that the opinion has gone abroad that aluminum is corroded in salt water.

"We then did not know that salt water is such an enemy of zinc, but these and other experiments taught us that when aluminum is to be used in and around salt water, we have got to use other alloys than zinc. This we can do. The difficulty has been overcome by using alloys of copper and nickel. We had to find this out by experimenting, and now we are not recommending the use of any alloys which contain zinc for use around salt water, and the alloys we have used for marine work which have had no zinc in them, while they do not collect barnacles, do not corrode to an appreciable extent.

"I personally supplied the aluminum plates for the Defender. They are made with nickel alloy. There is no danger in her plates at all, so far as direct corrosion goes; the only thing to be feared is galvanic action between the aluminum plates and other metals.

"Aluminum is like any other metal and must be treated like any other. If aluminum used in ship construction is kept clean and painted there will never be any trouble with it."

From this statement it is obvious that improvements in processes of manufacture can practically nullify many present and undeniable defects. Aluminum may not have all the virtues some of its enthusiastic friends may claim, but that it has its possibilities in ship building no one doubts. It is only following its predecessors by the same route of experiment to success.

## SIGNALING IN A FOG.

A novel arrangement for signaling at sea during fogs has been placed in position on Winter Quarter lightship No. 45, now repairing and refitting at Wilmington, Del It consists of two safety oil engines, supplying compressed air to two upright boilers, which in turn are automatically acted upon by time clocks, placed above. These open and close the whistle valves alternately every fifty-five seconds. No steam power is used, the power being derived from explosions of oil vapor. The pressure of air is regulated at 40 pounds, and gives a shrill blast at each explosion. The new appliance is expected to prove effective in maintaining and operating the fog whistle when coal might not be obtainable for fuel, and in transmitting a clear tone for many miles.

### HOW MINERAL WOOL IS MADE.

Of those who know what mineral wool is or silicate-cotton, as it is sometimes called, probably only a small number are familiar with the simple process by which it is made. The wool itself, serving a variety of useful purposes, as a non-conducting covering against heat and cold alike, for steam pipes and cold storage room walls as a sound "deadener,' in floors of buildings and as a means of fireproofing, among many others, is, as its name implies, a soft and woolly substance, consisting of a mass of very fine mineral fibres interlacing one another in every direction, and thus forming an endless number of minute air cells. The wool appears on the market in a variety of colors, principally white, but often yellow or gray, and occasionally quite dark, and it is made by converting scorial and certain rocks while in a molten state into a fibrous condition by a steam blast directed against the liquid material. Blast furnace slag forms the raw material for one variety of the wool, and sandstone for another, yielding, respectively, slag wool and rock wool, the latter being preferable for pipe covering because of the absence from it of sulphur, which, with moisture present, becomes an active corroding agent. The furnace slag or rock, as the case may be, is melted in a large cupola, and as it trickles out at the tap hole in a somewhat sluggish stream it meets a high-pressure steam jet which atomizes the woolen material, if it may be so termed, blowing it in fleecy clouds into the storage room provided for it. Soft and downy, the stuff settles wherever a resting place affords itself, the heavier and easier wool coming down first, while the lighter portions are blown further along by the force of the steam and settles in the more distant parts of the room, the material thus naturally grading itself into varieties of different quality. A thousand pounds of wool per hour are turned out by one of the cupolas, and after the storage room has been blown full the flocculent mass is pushed into bags, ready for the market. The whole process affords an admirable and interesting illustration of the utilization of an utterly waste product.—Cassier's Magazine.

### DREDGING CONTRACTS AWARDED.

Gen. Poe of Detroit has received bids on contracts for dredging out the approaches to the Soo canal and shoals in Mud Lake and Hay Lake. The bids were made separate. Dunbar & Sullivan, of Buffalo, made the lowest bid for removing the shoals at the west approach of the canal at 28 cents for a cubic yard, or $25,396. The other bids ranged to $1.50 per cubic yard. E. J. Hingston, of Buffalo, bid 98 cents per cubic yard and the Buffalo Dredging Company bid $1.45. Carkin, Stickney & Cram of Detroit ,wanted $136,050, or nearly six times more than Dunbar & Sullivan.

For removing the shoals in the east approach, W. A. McGillis & Co. of Chicago bid 14½ cents per cubic yard; E. J. Hingston, 79 cents; Buffalo Dredging Company, 95 cents. For dredging 348,554 cubic yards off Six Mile Point, Mud Lake, McGillis was also the lowest bidder at 10¼ cents; Dunbar & Sullivan, 11 3-5 cents; Hingston, 22½ cents; Buffalo Dredging Company, 95 cents. For dredging shoal No. 29 in section 4 of the deep channel project, Mud Lake, McGillis bid 65 cents for each excavation and $3.75 for rock; John Hickler, of Buffalo, 95 cents and $6; Hubbell & Stone of Buffalo, $1.15 and $6; Hingston, $1.25 and $6.50; Dunbar & Sullivan, 90 cents and $12. The bids will be passed upon at Washington. According to the lowest figures, the total cost of the work will be $116,732, and of this amount McGillis was the lowest bidder on four-fifths.

### THE CAYUGA IN GOOD CONDITION.

James Reid, of Bay City, Mich., has located the Cayuga and says she is in 101 feet of water, laying on her side but in good condition, and expects to have her raised and in dock without any great difficulty. The boat is about three miles north of Skillogalee light house, and with fair weather and no unusual delays he will begin operations on the 12th inst.

### WILLIAM HENRY LELAND WANTED.

Anyone knowing the whereabouts of William Henry Leland, supposed to be an engineer on some lake steamer, the son of L. J. Leland, of Port Leydend, Lewis Co., N. Y., will please send his address or that of his wife, to Rev. L. J. Leland, Hermitage, Tenn., or to the office of THE MARINE RECORD. Papers will please copy.

### RUSSIAN IRON INDUSTRIES.

Russia has been very slow in the development of her iron industries, says the American Machinist. With inexhaustible deposits of iron ore of the very best, and abundance of fuel, she is behind even France which is not rich in iron ores. In the last ten years Russia's pig iron production has increased three-fold, but is still trifling as compared with her wealth of opportunity. In 1894 the following was the pig-iron production of the countries named:

| | |
|---|---|
| England | 8,251 592 tons. |
| United States | 7,457,128 " |
| Germany | 6,301,544 " |
| France | 2,293,112 " |
| Russia | 1,498,648 " |

Here it will be seen that England produced five and one-half times as much as Russia, the United States nearly five times as much, and Germany four times.

The United States began late, and has nearly caught up to old England, and Russia is now asking, "Why should that which is possible for America be impossible for us?" In the Urals many beds of iron are not worked, although the red hematite ores of the region deserve special attention. The ore yields 64 per cent. in smelting. Forests are in abundance, but are wasted in being burned down instead of being used for fuel for iron industries.

The duty on iron in Russia is of two kinds—a "raised" tariff, which is charged upon iron from countries with which Russia has no agreement, and the conventional tariff upon iron from countries with which she has an agreement. The "raised" tariff on iron in bars, puddling iron, iron in powder, and iron rails, is $32.91 per ten, while the conventional tariff is $21.39 per ton. The "raised" tariff on sheet iron to No. 25 Birmingham gage is $43.60 per ton, and the conventional tariff is $27.79 per ton. On sheet iron above No. 25 the "raised" tariff is $47.90 per ton, and the conventional tariff is $34.20. The Consul-General at St. Petersburg, from whose report the above information is gathered, concludes as follows:

"Russia thus far has neglected the riches which nature has given her, and acts as a people for whom iron is not an article of first necessity, but of luxury. Here, it would seem, are rich fields for enterprise and industry, and a profitable opening for capital."

In reply to a correspondent who asks some very pertinent questions regarding the bursting of a tube in a Babcock & Wilcox water tube boiler, whereby one man was killed, and why the lap-welded iron tubes were used instead of solid drawn steel tubes, the editor of the Shipping World answered in plain English, and shows the foolishness of setting aside the years of experience of firms of well known boiler manufacturers, and accepting some purely theoretical idea of an engineer, though perhaps very capable:

"The 'Board of Trade' insisted on lap welded iron tubes being used, although solid-drawn steel tubes for these boilers had actually been delivered at the works of the firm referred to.

"The accident was caused by one of these lap-welded iron tubes bursting, the rip being nearly two feet long. The casualty was clearly the direct outcome of the interference of the 'Board of Trade,' since a more unsuitable material for the tubes could scarcely have been found.

"The expostulations were made in writing, above the signature of the firm alluded to, and there are few, if any, firms whose opinion carries more weight. The firm also had the advantage of many years' experience with this type of boiler, whereas the 'Board of Trade' had none whatever.

"Caution, up to a certain point, is undoubtedly a virtue; beyond that point its possessor tends rapidly towards mental paralysis and general imbecility.

"The 'Board of Trade' insisted on having its own way, because, we suppose, it did not know any better."

A comparative statement of iron ore rates from the head of Lake Superior, which is a fair index of the general state of the carrying trade, for the past eight years may be of interest. On September 11th of the following year, rates were: 1888, $1.65 per ton; 1889, $1.40; 1890, $1.00; 1891, 1.25; 1892, $1.00; 1893, 60 cents; 1894, 85 cents; 1895, $1.25.

In 1893 the Escanaba rate on September 11th was 50 cents, in 1894 it was 45 cents, and to-day it was 80 cents. Comparisons of the present year with seasons prior to 1890 are on some accounts misleading, as to the state of lake business on account of the increased size of vessels.

### FLOTSAM AND JETSAM.

The steamer St. Magnus (Br.) which capsized in such a queer manner in Cuyahoga River a few months ago, ended her career a week ago by burning to the water.

Vessel men are making vigorous complaint on account of the guy ropes being in the way of vessels at the new bridge at Toledo. The matter has been reported to the customs officials.

Clifford Sanderson, keeper of the range lights on Dunlap Reef, says the water in Sturgeon Bay is 14 inches lower than last season at this time, and two feet lower than in 1893.

Contractor Olson reports the Plum Island life saving station nearly completed and the work on the station at Bailey's Harbor well advanced. Both stations are to be ready November 1st.

Henry McMorran, of Port Huron, has been awarded by the underwriters the contract for raising the sunken steamer Britannic. His bid was the lowest, and he will very shortly set about the work with pontoons.

The lumber cargo of the J. L. Hurd, 100,000 feet of pine which had been three months in the water, was sold by the U. S. marshal at Harbor Springs, as it lay in the steamer's hold, for $165 to Foster & Burke.

The tow barge 337 feet long, by 43 feet beam, and 26 feet deep, which Capt. McDougall is reported to be figuring on with Cleveland parties, is the McBrier barge, on which several lake builders have submitted figures.

J. W. Kellogg, Manager Marine Sales Department, of the General Electric Co., Schnectady, N. Y., has just finished a trip around the lakes, and says his company are getting their share of the business, and is much pleased with the general outlook for the next few years.

General James A. Dumont, who has been making a trip around the lakes, says he made special observation of the alleged neglect of vessels to exchange passing signals, and discovered only one violation of the law. That occurred in the St. Clair River, and the owners of the boat, which belongs in Buffalo, were notified and the captain relieved of his command. Gen. Dumont says the trouble has been much exaggerated.

A number of cases of heroic action have been brought before the Royal Canadian Humane Association, and at a recent meeting of the governors, were awarded medals or parchment certificates. Among the cases considered was that of Capt. La France, of the steamship City of Midland, for his prompt action in saving the life of David Cadorette from drowning in Georgian Bay, near Spanish river. He was awarded a certificate and the officers and crew were highly commended.

The following received from the Hydrographic Office is of special interest: In the regular issue of the Hydrographic Office Notice to Mariners for September will appear the following small charts, showing some of the investigations and surveys carried on by the U. S. S. Michigan since her completion of the survey of the harbor of Cleveland, during the months of June and July. Lake Michigan—Richards Reef; Middle and Nine Foot Shoals, Forte Des Horte; and the vicinity of Waugohance Light House; Lake Huron-Spectacle Reef, and Martin Reef. This shows extraordinary activity on the part of the chart construction force of the office, as these surveys were made during the latter part of July and the month of August. Those masters not receiving the Notice to Mariners by the twenty-fifth of the month, may obtain them by writing or calling in person at the Branch Hydrographic Offices in Cleveland or Chicago.

A well-known Austrian engineer, M. Pfister, is announced as having discovered a remarkable property of the trunk of trees, namely that of retaining the salt of sea water that has filtered through the trunk in the direction of the fibres. He has consequently constructed an apparatus designed to utilize this property in obtaining potable water for the use of ships' crews. This apparatus consists of a pump, which sucks up the sea water into a reservoir and then forces it into the filter formed by the tree trunk. As soon as the pressure reaches 1.5 to 2.5 atmospheres the water is seen—at the end of from one to three minutes, according to the kind of wood used—to make its exit from the other extremity of the trunk; at first it drops and then in fine streams, the water thus filtered being potable, freed, in fact, from every particle of the usual saline taste, which is such a drawback to water obtained in the ordinary manner.

## WORLD'S LOSSES OF TONNAGE.

Table showing the number, net tonnage and nationality of Sailing Vessels totally lost, condemned, etc., during the quarter ended 31st March, 1895, as reported up to the 13th July, 1895, and showing also the number and tonnage of sailing vessels owned in each country. (Vessels under 100 tons net are not included in this return.

| FLAG | SAILING VESSELS, Owned according to Lloyd's Register Book, 1894-95 | | HOW LOST. Abandoned at Sea | | Broken up Condemned (A), etc | | Burnt | | Collision | | Foundered | | Lost, etc (A) | | Missing, (A) | | Wrecked, (A) | | TOTAL | | | PER CENT. LOST SAILING VESSELS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No | Tons | No | Tons | No | Tons | No | Tons | No | Tons | No | Tons | No | Tons | No | Tons | No | Tons | No | Tons | | of Vessels owned | of Tonnage owned. |
| British { United Kingdom | 2 939 | 2,499 227 | 2 | 2 567 | 5 | 1 813 | ..... | ..... | 3 | 427 | 2 | 333 | ..... | ..... | 12 | 2.337 | 15 | 8.819 | 39 | 16.296 | | 1 33 | 0 65 |
| British { Colonies | 1 536 | 632 371 | 3 | 833 | ..... | ..... | 1 | 1.297 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 348 | 8 | 4 280 | 13 | 6.758 | | | |
| America, United States of | 2 704 | 1.283,693 | 17 | 7.330 | 2 | 1 521 | 2 | 896 | 1 | 720 | ..... | ..... | 2 | 542 | 7 | 3 086 | 17 | 6.535 | 48 | 20 630 | | 0.85 | 1 07 |
| Austro-Hungarian | 169 | 20,270 | ..... | ..... | 1 | 519 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 330 | 1 | 444 | 3 | 1.293 | | 1 78 | 1 61 |
| Danish | 562 | 134.654 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 243 | 3 | 354 | 5 | 597 | | 1·78 | 1 61 |
| Dutch | 254 | 130 034 | 1 | 458 | 4 | 2.288 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 228 | 2 | 373 | 8 | 3,347 | | 0 89 | 0.44 |
| French | 623 | 197.820 | 1 | 628 | 3 | 913 | ..... | ..... | ..... | ..... | 1 | 149 | ..... | ..... | 1 | 172 | 7 | 1,025 | 13 | 2,887 | | 3 51 | 2.57 |
| German | 853 | 569,895 | 5 | 2 127 | 2 | 1 624 | ..... | ..... | ..... | ..... | 1 | 470 | ..... | ..... | 4 | 1 870 | 9 | 4.318 | 21 | 10 409 | | 2 0) | 1.46 |
| Italian | 1,052 | 453,053 | 1 | 434 | ..... | ..... | 1 | 366 | 1 | 984 | ..... | ..... | ..... | ..... | 1 | 417 | 5 | 2,065 | 9 | 4 266 | | 2 46 | 1 83 |
| Norwegian | 2,578 | 1.265 274 | 11 | 6,680 | 4 | 1.938 | 1 | 2.050 | ..... | ..... | 2 | 683 | ..... | ..... | 6 | 2 174 | 10 | 4,165 | 34 | 17.690 | | 0 86 | 0.94 |
| Russian | 821 | 247 130 | 2 | 928 | 1 | 3 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 278 | 4 | 1,5 6 | | 1.32 | 1 40 |
| Spanish | 368 | 98.314 | 1 | 293 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3 | 702 | 4 | 995 | | 0 49 | 0.63 |
| Swedish | 914 | 271 235 | 3 | 2,389 | 1 | 322 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 331 | 7 | 3,546 | 12 | 6.588 | | 1 09 | 1 01 |
| Other European Countries | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3 | 1 096 | 3 | 1 096 | | 1.31 | 2 43 |
| Asia | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | | ..... | ..... |
| Central aud South America | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 778 | 1 | 778 | | ..... | ..... |
| Other Countries | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | | ..... | ..... |
| | | Total... | 47 | 24,667 | 23 | 11 288 | 5 | 4.609 | 5 | 2,131 | 6 | 1 635 | 2 | 542 | 37 | 11 536 | 92 | 38 778 | 217 | 95.186 | | | |

Table showing the number, net and gross tonnage and nationality of Steam Vessels totally lost, condemned, etc., during the year 1894, as reported up to 30th June, 1895; and showing also the number and tonnage of steam vessels owned in each country. (Vessels under 100 tons gross are not included in this return.)

| SAILING UNDER FLAG AS IN TABLE ABOVE. | STEAM VESSELS, Owned according to Lloyd's Register Book, 1894-95 | | | HOW LOST. Abandoned at Sea | | | Broken up Condemned [A] etc | | | Burnt | | | Collision | | | Foundered | | | Lost, etc [B] | | | Missing [C] | | | Wrecked [D] | | | TOTAL | | | PER CENT LOST, [STEAM VESSELS] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No | Tons | | No | Tons | | No | Tons | | No | Tons | | No | Tons | | No | Tons | | No | Tons | | No | Tons | | No | Tons | | No | Tons | | of Vessels owned | of Gross Tonn'ge owned |
| | | Net | Gross | | Net | Gross | | Net | Gross | | Net | Gross | | Net | Gross | | Net | Gross | | Net | Gross | | Net | Gross | | Net | Gross | | Net | Gross | | |
| | 6.322 | 5,768,473 | 9,307 783 | 4 | 7 085 | 11 091 | 28 | 26 482 | 43 204 | 4 | 739 | 1 354 | 28 | 14,868 | 23 812 | 8 | 5,204 | 8,101 | 1 | 1,355 | 2,134 | 9 | 9,446 | 14 683 | 65 | 58,553 | 93,565 | 147 | 123732 | 197944 | 2 33 | 2 13 |
| | 863 | 322.835 | 530 570 | ..... | ..... | ..... | 8 | 2.997 | 4.738 | 1 | 216 | 342 | 1 | 147 | 233 | 2 | 379 | 591 | ..... | ..... | ..... | 1 | 311 | 458 | 9 | 5,304 | 8,427 | 22 | 9,354 | 14,789 | 2.55 | 2.79 1.17 |
| | 610 | 639 244 | 887.766 | ..... | ..... | ..... | 6 | 3 272 | 5,090 | 3 | 1,646 | 2,697 | 1 | 581 | 848 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 3 | 1,237 | 1 767 | 13 | 6,736 | 10,402 | 2 13 | 0 23 |
| | 162 | 135,977 | 222 348 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 263 | 505 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 263 | 505 | 0.62 | 0.93 |
| | 253 | 121 026 | 198 577 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 1,149 | 1,842 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 1,149 | 1,842 | 0 40 | 2.57 |
| | 207 | 209 079 | 307.145 | ..... | ..... | ..... | 2 | 2 999 | 4 495 | ..... | ..... | ..... | 1 | 1,073 | 1 520 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 1 033 | 1,504 | 1 | 231 | 380 | 5 | 5,336 | 7,899 | 2 42 | 2 21 |
| | 555 | 471,383 | 891,720 | ..... | ..... | ..... | 5 | 3 909 | 6 959 | ..... | ..... | ..... | 2 | 3,497 | 5,238 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 7 | 5,320 | 7,488 | 14 | 12,726 | 19,685 | 2.52 | 1.82 |
| | 912 | 826,221 | 1.214 830 | 1 | 1,097 | 1,476 | 4 | 3.413 | 5 014 | ..... | ..... | ..... | 2 | 547 | 806 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 401 | 595 | 9 | 10,130 | 14,189 | 17 | 15,588 | 22,080 | 1 86 | 4 98 |
| | 224 | 202,397 | 318.706 | ..... | ..... | ..... | 10 | 8,716 | 13 641 | 2 | 1.302 | 1 876 | 1 | 119 | 189 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 118 | 180 | 14 | 10,255 | 15,886 | 6 25 | 2.36 |
| | 559 | 265 374 | 403,813 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 139 | 188 | 2 | 1,436 | 1,864 | 1 | 197 | 263 | ..... | ..... | ..... | ..... | ..... | ..... | 9 | 4,944 | 7 201 | 13 | 6,716 | 9 516 | 2.33 | 0 86 |
| | 248 | 135 820 | 229 542 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 1,319 | 1,972 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 1,319 | 1.972 | 0.81 | 1.64 |
| | 392 | 289,232 | 449 044 | ..... | ..... | ..... | 3 | 1.940 | 2 920 | ..... | ..... | ..... | 1 | 1,026 | 1,578 | 2 | 761 | 1,215 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 1,025 | 1,644 | 7 | 4,752 | 7,357 | 1.79 | 0.34 |
| | 535 | 165 803 | 226,769 | 1 | 615 | 769 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 615 | 769 | 0 19 | |
| | ..... | ..... | ..... | ..... | ..... | ..... | 4 | 1 676 | 2 516 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 3,120 | 4 637 | 1 | 206 | 331 | 7 | 5,002 | 7,484 | | |
| | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 549 | 849 | 1 | 1,234 | 1,991 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 5 | 2 846 | 4 388 | 8 | 4,629 | 7,228 | | |
| | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 186 | 238 | ..... | ..... | ..... | 1 | 687 | 1,030 | ..... | ..... | ..... | 7 | 2 022 | 3,303 | 9 | 2,895 | 4,571 | | |
| | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | | |
| | | | Total... | 6 | 8.797 | 13.336 | 72 | 55 953 | 89,426 | 12 | 5,276 | 8 448 | 43 | 25,062 | 38,803 | 14 | 7,690 | 12,012 | 2 | 2,042 | 3,164 | 14 | 14 311 | 21 877 | 118 | 91 936 | 142863 | 281 | 211067 | 329929 | | |

NOTE.—Material of construction of above vessels: Steel, 3, 4,138 tons. Iron, 9, 9,839 tons. Wood and Composite, 205, 81,209 tons.

(A) Some cases of condemnation may have been consequent upon stress of weather etc., experienced prior to the period covered by the return. Vessels condemned after damage by fire, collision, stranding, etc., are included, according to the casualties, under "Burnt," "Collision," "Wrecked," etc.

(B) Under the heading "Lost, etc.," are included total losses which, for want of sufficient information, or for other reasons, cannot be otherwise classified.

(C) Under the heading "Missing," are included only vessels posted or reported during the year as missing.

(D) Under the heading "Wrecked" are included vessels lost through stranding, or through striking rocks, sunken wrecks, etc.

* This vessel is the Kow Shing, sunk by a torpedo.

### WIDENING USE OF GAS ENGINES.

Some of the chief obtacles to the extended introduction of the gas engines have been gradually removed by the improvements in methods and apparatus for the manufacture of producer gas on a small, yet economical, scale. In this, as in other branches of engineering, the law of supply and demand operates to mutual advantage, and isolated gas-engine plants are rapidly coming to the front. On the other hand, for the distribution of power from a central plant to greater or less distances gas offers peculiar advantages. There are practically no losses in distributing the gas in pipe lines, except leakages, which can affect the economy of the distribution. Losses of pressure and temperature changes do not in the least affect the economy of the gas engine at the end of the line. Therefore, the distribution of power by gas, and its utilization by gas engines, scattered over a widely extended area, may come to be a rival of some of the other methods. And the facility of storage and use of gas for heating are additional advantages.

It seemed doubtful for a long time whether gas engines could be made and economically managed in large units; but their present use up to 300 horse power and the contemplated manufacture of gas engines of 500 horse power and upward, leave no room for serious doubting. But it is open to discussion whether there is the same inherent gain in economy in the use of large gas engines as in the use of steam engines. Of course, on the general principals of power production, large units are more economical per horse power than small units. Nevertheless, there is scarcely an argument advanced for the use of large steam engines that can be similary advanced in the case of gas engines.

In the matter of arrangement of gas engine cylinders there is undoubted preferance manifested for the vertical type, and in pairs, with cranks at 180 degrees apart. Four-cylinder or quadruplex gas engines are being seriously considered, to gain an additional advantage along the same lines as the two-cylinder or duplex type, namely, a greater number of explosions per revolution, and, consequently, a increased opportunity to control the supply and explosions according to the load.—W. S. Aldrich in Cassier's Magazine.

### BRITISH ENGINEERS AND SPANISH STEAMERS.

"By an order of the Spanish government just issued," says the Liverpool Journal of Commerce, "all steamers sailing under the Spanish flag or subsidized by the Spanish government will, in future, carry none but Spanish engineers. The prevailing practice at present is to carry at least two British engineers on each Spanish steamer and formerly all the engineers were British."

### LAKE SURVEY PARTIES HUSTLING.

The parties of the lake survey, under the direction of Gen. Supt. E. S. Wheeler, are making hay while the sun shines. Engineer Thomas Russell's party is doing triangulation work on Batchewana Island. E. E. Haskell's party is doing the same class of work on Parisian Island. The topographical corps in charge of Engineer H. von Schon is working at Point aux Frenes. Engineer Glen Balch, who directs the reconnoitering and construction force, was in the city Thursday. He is engaged in building an 80-foot station eight miles south of Pickford.—Sault Ste. Marie News.

## SIGNALING AT SEA.

By the latest invention for signaling at sea after dark. all a sailor has to do, provided he can spell it, is to sit down on a chair and thump away on a writing machine. International codes are all right in daylight, but when the sun goes down one doesn't always feel like intrusting all hope of increasing his bank account to the steadiness of a green or a red lantern. Now, however, if the experiments under way at the Brooklyn Navy Yard prove successful, electricity will be called into play, and those who sail the waters of the deep may read what the passing craft think of them by merely spelling out the message and putting it together.

The principle of the latest invention is that of a monogram, inasmuch as by the use of a frame whose dimensions may be regulated at the will of the shipmaster every letter of the alphabet may be produced on the plane by means of incandescent electric lights, one letter after another.

The frame is divided into 20 sections. On each of these sections is a row of electric lamps. Each section of the monogram is connected with a separate current or circuit of wire. By a combination of the various circuits all the letters of the alphabet may be formed. The wires controlling the current are carried in a cable to a machine resembling a typewriter, which may be located any distance away from the monogram, so that the operator may be entirely free from any disturbing influence and may be fully protected from storm. The keyboard of the signaling machine is that of a regulation board on the standard typewriters. Practically, the only difference is that each key is in reality a switch and the supply of the electricity illuminates or extinguishes the light as the operator may desire.

A working model has been built and has given some very satisfactory results in the Brooklyn Navy Yard. Some time ago a committee of naval officers was appointed by Secretary Herbert and the tests have been watched with a great deal of curiosity by many persons interested in maritime affairs. The model in the navy yard is three feet six inches square, but there is no limit to the dimensions which may be given to the frame. The size of the letters is, of course, in accordance with the extent of the frame. For all practical purposes, however, the navy yard frame is as large as will be necessary in actual service. It is declared that letters 3½ feet long may be clearly seen at sea for a distance of 10 miles. The frame now being tested has lights of 16 candle-power.

It is believed that not alone will the invention be of great service to the navy, but that the larger yachts will use it. Almost all of the newer yachts have electric plants, and these may be utilized in the new signals. The frame may be run to the masthead and signals spelled out letter by letter.

## LAKE HURON WILL NOT BE AFFECTED.

*To the Editor of The Marine Record:*

From the last number of your journal it appears that an error is still entertained by the public, with regard to the relative amount of subsidence of Lakes Michigan and Huron. The idea is still prevalent that Lake Huron will be affected to the same extent as Michigan.

This error probably comes from the fact that visibly these lakes are on the same level, as indeed, for all purposes of navigation, they are; but really, Michigan is a number of feet above Huron, geographers say 5½ feet as a mean. The distance from Waugoshance shoal, or reef, to the foot of the Straits at Mackinaw Island is, say about 50 to 55 miles, giving a slope of about 1¼ inches per mile, small, yet sufficient to run off the entire inflow of the lake, under the 5½ foot head. We can now see the reason why Lake Huron can not be so much affected by the outflow through the Chicago drainage canal as Lake Michigan.

The surface of Lake Michigan being so much above the surface of Lake Huron, no portion of the immense inflow to the latter mentioned lake, from Lake Superior can ever replace any portion of the outflow through the canal. As a consequence, this outflow through the canal is a larger per cent of the total inflow to Lake Michigan, than of the inflow to Lake Huron. In the former case it is probably between 20 and 40 per cent. In the latter it will probably be found within 3 to 5 per cent; and as a consequence, the subsidence of Lake Huron as compared with that of Lake Michigan, resulting from the outflow through the drainage canal will be practically infinitesmal, so that when merged in with other changes of level, the results from this cause will be practically inappreciable.

H. C. PEARSONS.

Ferrysburg, Mich., Sept. 5.

## SAULT TRAFFIC DURING AUGUST.

The official figures of Gen. Supt. Wheeler, of the St. Mary's Canal, for the month of August, reached THE RECORD just in time for insertion last week. There was a large increase in the volume of traffic over the corresponding month last year, and in both freight and registered tonnage all previous records were broken by 4,149 tons and 110,400 tons respectively. Following are some additional figures:

NUMBER AND CLASS OF VESSELS.

| | |
|---|---|
| Steamers | 1,851 |
| Sails | 868 |
| Rafts and unregistered craft | 90 |
| Total passages | 2,809 |
| Total registered tonnage | 2,766,112 |
| Total freight | 2,481,736 |
| Total number of passengers | 10,964 |
| Total number of lockages | 1,063 |

Total time lock was operated, 701 hours and 22 minutes.

Aggregate time consumed by vessels in passing, 1,619 hours and 35 minutes.

COMPARATIVE STATEMENT WITH AUGUST, 1894.

| | Passages. | Registered Tonnage. | Freight. Tonnage. | Passengers. |
|---|---|---|---|---|
| 1895 | 2,809 | 2,776,112 | 2,481,736 | 10,964 |
| 1894 | 2,269 | 1,991,996 | 2,290,791 | 8,700 |
| | 540 Increase. | 774,116 Increase. | 190,945 Increase. | 2,264 Increase. |

The canal postoffice handled 22,983 pieces of mail during the month.

## NEW TYPE OF SLOOP.

The Alert and Torch, the new sheathed sloops, sister vessels of 960 tons displacement, were successfully floated out of dock at Sheerness dock yard recently. Built from the designs of Mr. W. H. White, C. B., Director of Naval Construction and Assistant Controller of the Navy, the Alert and Torch which represent a new type of sloop, were laid down in No. 2 dock on December 7, 1893. They have been built with steel plating ¼ inch thick, which is covered with teak wood sheathing, 3½ inches thick, to a height of 2 feet above the water line. The stern and rudder posts are of phosphor bronze, and were cast at Sheerness dock yard. They have no armored protection, but a steel watertight bed runs above the boiler and engine rooms, and also forms a division between the upper and lower coal bunkers. Their principal armament will consist entirely of quick-firing guns, the vessels having been designed to carry six 4-inch guns and four 3 pdr. guns, together with two machine guns. Their engines and boilers, which have been made at Sheerness dock yard, have been designed to register 1,400 H. P. under forced draft, with a speed of 13.25 knots, and 1,100 H. P. under natural draft, with a speed of 12.25 knots. They will be fitted with three masts and will carry yards on the fore and main masts.

## AS OTHERS SEE US.

"I never could see," said the doctor to his brother, who was a draftsman, "how a man could be contented to sit all day and just make lines on paper. It would be very dull music for me and I can't see where the ambition comes in." "And," said the draftsman, "I never could be contented to squeeze people's wrists, sort out a lot of little square papers and jounce a little powder out of a bottle on each piece, thinking all the while that it was about even chances whether I killed the patient or not." "But," said the doctor, "we have to know what to put in those little papers; anyone can wrap up a little powder." "And," said the draftsman once more, "if we didn't know where to draw lines and how long to make them, you wouldn't ride 26 miles an hour across the North Atlantic. Any one can make marks on a piece of paper." And the doctor allowed there might be something in drafting after all.

All charts of all portions of the lakes supplied promptly by THE MARINE RECORD, No. 144 Superior St.

tleships and a number of torpedo boats, and the estimates which will soon go to the Treasury will include an amount sufficient to begin work on proposed new ships.

## NOTES.

THE Navy Department has been notified that the battle-ship Maine is finished and can be placed in commission by the latter part of the month.

HARBOR improvements are being made at several of the South American ports. It is not improbable that this desire for improvements may even extend to quarantine matters.

THERE promises to be an extension of shipbuilding on our Pacific coast. Indeed, the outlook is such that it would not be surprising if within a very few years, vessels for foreign buyers were built in our Pacific shipyards. The West Coast is a big place and its maritime interests will prove to be in keeping with its size.

AN attempt is to be made by a private firm to create a new port at Bay of Sance, between Montevideo and Colonia. Concessions are to be made by the Uruguayian government, and it is expected that a deep and commodious seaport, with a good thriving trade, will be the result of the endeavor within a comparatively few years.

A STEAMER running on rails is a curious sight to be seen near Copenhagen. Two lakes are separated by a narrow strip of land, on which rails are laid running into the water on either side. The steamer, which is 44 feet long and carries 70 passengers, is guided to the rails by piles like a ferry slip; it has wheels on either side which fit the rails, and is driven full speed up one side of the incline and down the other into the water on the other side.

THE report of the Canal Commission of Philadelphia, in regard to the Atlantic Coastwise Canal across New Jersey, is at hand and shows a careful study of the question by the Commission. The consulting engineer, Mr. N. H. Hutton, estimates a cost of $24,124,700 for a canal 28 feet deep, and $14,374,100 for one 20 feet deep, the additional advantages seeming to favor the deeper channel. Prof. L. M. Haupt, the engineer in charge of survey, has long been an active worker in behalf of this canal, and it must be very gratifying to him to see his work taking definite shape.

IT IS reported that the Hamburg-American Packet Co. has ordered from Harland & Wolff, of Belfast, Ire., a twin screw steamer, which will be the largest in the world. The new vessel is intended primarily for freight, but it will have elegant cabins cabins for 200 first-class passengers, and provision will be made for 1,500 steerage passengers. The order was given abroad because the tender of the Harlands was much lower than those of the two largest German yards. The Harlands also agreed to have the new steamer ready in ten months, while the German builders wanted nineteen months for its construction.

FISHER & PORTER, 1025 Monadnock block, western agents for the Bethlehem Iron Co., report that the business outlook in their line is very encouraging. They say that they have done more business in the past two months than during the preceding first five months of the year. Showing the diversity of uses for which their forgings are required, they mention the following: Hollow plungers for hydraulic elevators: hollow quills for malthouse and grain elevators; hollow forged cylinders and shafts for ore separators; hollow piston-rods of nickel steel for rock drills and channelling machines; sockets for drills for coal-mining machines; hollow forged shafts for electric railway engines, West Chicago Street Railroad; hollow piston-rods for blooming engines for Ohio Steel Co., Youngstown, O., and Apollo Steel Co., Vandergrift, Pa., hollow shafting for rotary gas engines; hollow spindles for lathes; hollow forged nickel steel piston-rods for drop hammers; crossheads and pins, cranks and pins, connecting-rods, piston-rods, rocker-arms, cam shafts, main shafts, etc., for stationary engines of all sizes, also for ice machines and air compressors; shafts for blowing engines for Carnegie Steel Co., Pittsburg; shafts for rolling mill engines for Illinois Steel Co., Chicago, shafts for electric generators and motors; piston-rods and shaft for lake steamers; single, double, and quadruple throw solid forged crankshafts for gas engines; shafts and roller shells for ore crushers; stems and rollers for stamp mills; suction and delivery valves for pumping engines; spindles for turret lathes; rail-posts for railroad crossings; pistonheads and rams for steam hammers; piston-rods for drop hammers; axles for gun carriages for United States government; polar and declination axes for Yerkes telescope and other smaller telescopes.

# THE MARINE RECORD

ESTABLISHED 1878.

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CLEVELAND, O., SEPTEMBER 12, 1895.


THE Canadian Sault canal opened Monday as announced, and its effect was at once felt in relieving the American lock of a large portion of it waiting tonnage. Steamers will not probably add much to their cargoes just yet, however, as they might thereby subject themselves to more serious delays, should everybody count on passing through the new lock.

IN commenting upon the acts of a public official, it should be assumed that his motives are wise and that he is conversant with the situation in which he is to make decision. It is surprising that Gen. Supt. Kimball's intention to build a new Cleveland life-saving station should be criticized by any one in Cleveland, particularly on the score of economy. It is true that stations are needed where none have yet been placed, and that repairs are needed elsewhere; but this is true of every similar branch of the public service. Gen. Supt. Kimball, as has been previously stated in these columns had no choice in the matter, as the ultimate removal of the old west pier of Cuyahoga River, on which the station stands, is practically a sure thing, other circumstances make next spring an unusually auspicious time to build a new Cleveland station.

A TIMELY suggestion comes in a letter from Capt. H. C. Pearsons printed in another column regarding the Chicago Drainage canal and its effect upon the level of Lake Huron, and pointing out the mean level of the latter is 5½ feet below the mean level of Lake Michigan. This seems to overcome the theory that the lakes other than Michigan will be seriously affected. As the fall of 5½ feet is spread out for a distance of 55 miles, the prevailing direction of wind must be taken into consideration, as entering into the case to some extent. Lake Michigan cannot be considered as any mammoth bayou, and has large water resources of her own; but it is probable that a very small percentage of the total volume of this lake passes down annually to the sea. Capt. Pearson's remarks in reference to the percentage which will pass out through the Chicago canal, as compared with the volume passing through the Straits, have evidently been thoughtfully written, and deserves careful contemplation.

### THE FREIGHT SITUATION.

During the past week ore rates, Duluth to Ohio ports, have advanced from $1 to $1.25, decidedly the most rapid gain of the season. The reason has been the great desparity between ore and grain rates. The latter held firm at 3½ cents, Duluth to Buffalo, which is equivalent to $1.30 on ore. Loose tonnage was diverted so generally to grain that practically no vessels could be secured for ore cargoes at the prevailing quotations. The extreme advance demonstrates the great strength of the ore market. Shippers required vessels and bid the price up at rapid speed. It is now almost on a level with grain. The movement from the stock piles in the Marquette range is not yet of sufficient volume to engage all contract tonnage and no wild tonnage is reported. Late Escanaba charters have been made at 75 cents.

The coal rate to the head of Lake Superior remains at 40 cents and charters are fairly free. But to Lake Michigan tonnage is very scarce. To Milwaukee vessels have been chartered from Ohio ports at 75c.

### THE CLEVELAND & BUFFALO LINE'S EXTENSION.

This paper has for about six months been in possession of the information that the Cleveland & Buffalo Transit Co., have been arranging to run their steamer State of New York between Cleveland and Toledo. She will connect with the Buffalo line both ways, which means she would make up the trip to Toledo and return by daylight. It was particularly desired, however, that nothing should be made public, as certain conditions were yet to be investigated, and contingencies might arise, which would prevent the institution of the line at the time arranged. The news leaked out little by little, however, until it has become well distributed. Gen. Manager Newman will probably visit Toledo next week to make some dock arrangements, etc.

### NOTICE TO MARINERS.

SEUL CHOIX POINTE FOG SIGNAL.

Notice is given by the Light-House Board that, on and after September 10, 1895, during thick or foggy weather, a 10-inch steam whistle, recently erected at this station, at the northerly end of Lake Michigan, will sound blasts of 3 seconds' duration, separated by silent intervals of 17 seconds. The fog-signal building is a red brick structure, with red iron roof, and stands 124 feet S. 51° E. (SE ½ E.) from the light tower.

NOTES FOR NAVIGATORS.

Notice is given by Commander Dayton, that the Skilligalee black, third-class nun buoy, marking the end of the shoal extending in a northwesterly direction from Skilligalee Light-House, Michigan, is reported adrift.

Red can buoy No. 2, near the water works crib, Buffalo, and south of the International bridge, has shifted down stream about 200 feet. It now lies in the center of the channel and is likely to confuse pilots.

### TWENTY-FOUR NEW CANAL BARGES.

The Cleveland Steel Canal Boat Co. are so well pleased with the report of General Manager Charles E. Wheeler upon the first voyage of the experimental fleet, that a contract has been placed with the Globe Iron Works Company for the construction of twenty-four more of these barges, five of which will be steamers. The sizes of hulls will not be changed but each steamer will have two hundred and fifty horse power, while the Alpha has only one hundred and twenty horse power. The barges may also be fitted with strong flagstaffs, which may be used as jury masts when on Lake Erie, carrying light canvass when the wind is favorable.

The price of the new boats is said to be quite an advance over the first fleet, owing to the rapid increase in prices of materials.

The pioneer fleet has just left New York for Cleveland, with 7,500 barrels of sugar, which will be distributed through the Southwest.

To ascertain the power required to propel a ship, an electric locomotive is now said to be used having a motor which drives direct a device of toothed gearing on one of the axles. This locomotive runs on rails along the touring path of a canal, and draws a trolley with measuring instruments, which in its turn draws the model ship by a rope. The instruments automatically record the speed and power attained and consumed. By aid of the uniform rotation of the motor, a uniformity of motion is secured, such as was not possible with the rope-drive hitherto customary, yet which is of extreme importance to the absolute correctness of the results obtained.

### A NEW BUFFALO EXCURSION BOAT.

Mr. John C. Fitzpatrick who assumed the general management of the Crystal Beach Steamboat Company early last spring deserves the major portion of the credit for making the line the great financial success it has been this season.

This resort has been the most popular one out of Buffalo for several years, and the boats have carried thousands of people thither; but a lack of proper economy, together with a lavishly injudicious habit of issuing free passes reduced the profits of the boats until they sometimes fell below the zero mark. Mr. Fitzpatrick has corrected all this, and has wrought a marvelous change in the one season.

It is now stated that the company will very soon place an order for a fine steel boat for the line to be more speedy, with better sea going qualities than most of Buffalo's excursion boats and to carry a large number of people comfortably.

Gen. Manager Fitzpatrick states that the matter is still indefinite as yet.

### BALLOON VOYAGE TO THE NORTH POLE.

It has been reported that preparations were in progress by M. S. Andre, of Stockholm, Sweden, for a balloon voyage next year to the north pole, to explore a region which has never yet been invaded by land. Recently he read a paper, descriptive of his proposed enterprise, before the International Geographical Congress in London. In the opinion of the delegates present, who listened with intense interest to the reading of the paper, the project as set forth by the explorer, looked feasible, except that they did not quite comprehend how he would be able to supply sufficient gas for his balloon. In explanation he said that 1,700 to 1,800 cylinders filled with gas under pressure of 100, or 200 atmospheres will be required for the expedition, in order to refill the balloon from time to time. He believes he will be able to guide the machine by a system of sails and ropes acting as a brake in case of need by dragging on the earth. The car is to be spacious enough to contain a sledge, a sailing boat, several weapons, with ammunition, and a photographic camera. M. Andre said that M. Yon, of Paris, had entered into a contract to make the machine of double silk, of which about 5,500 cubic meters will be required, the cost being £2,200 sterling. The balloon is to be capable of carrying three persons, with the necessary instruments and ballast, and four months' provisions. It will be sufficiently light to hover in the air for thirty days at a height of 250 meters.

Early next spring it is proposed to erect a balloon house, and after filling the balloon, start on their aerial voyage for the pole in July with a fresh south or nearly south wind. The duration of the voyage must, of course, largely depend upon the strength of the wind. It might possibly last only five or six days, but M. Andre expects that it will take at least forty. Thirty days, he believes, will suffice for cruising about the central polar basin in all directions and taking a complete survey of it.

The return trip is to be made toward the inhabited parts of North America or northern Siberia. With a wind of average velocity, M. Andre says the balloon can make 19,400 kilometers in thirty days; whereas, the distance from Spitzbergen to the Bering straits, via the pole is only 3,700.

Not many years ago it was thought wonderful that marine engines were capable of continuous working, day and night, for seven days, between Queenstown and Sandy Hook. Now it occasionally happens that a 3,000-ton steamer will make the passage from England to Australia or to New Zealand without calling at a port on the way. Usually a stop is made for coal at Las Palmas or at the Cape of Good Hope, but these are exceptions. One or two voyages have been made from London to Wellington, New Zealand or to Dunedin, 16,000 miles without a break. On May 4 the Lund Line steamer Woolloomooloo arrived in Sidney from South Shields via Adelaide, and she reports making the passage round the Cape of Good Hope, without calling either there or at Las Palmas. The voyage occupied six weeks two and a half hours, equal to an hourly average speed of 11½ knots; engines going right through without an interruption of any kind. This is over half way round the world without cessation, and the surface condenser is what has made it possible, primarily.—Engineer.

### LUMBER STOCKS ON THE LAKES.

The lumber business on the lakes has gone by fits and starts this season, says the Northwestern Lumberman. At times the market in Duluth has been very active, provising a big business until the shipping season closed. These periods of activity have been followed by just as marked periods of dullness All the other manufacturing points on the lakes have been effected in the same way. The market has been spasmodic, affected largely by temporary requirments in distributing points. Altogether the cargo market at the principal manufacturing points has been a disappointment up to the present time. Sales have not been as numerous nor as large as was expected from the promise of the early spring, while prices have remained too low. Notwithstanding disappointment at the way sales have been made, lumber has moved fairly well from a good many ports, and the aggregate business of the year will show up pretty well, while the amount of lumber carried over at different ports will not be such as to affect the market to any extent next spring. Here at Duluth there will be pretty full stocks carried over, unless there is a change for the better in the market pretty soon. It will little no more in proportion to the total cut than was carried over last year, however. The cut of the mills on the bay and river on both sides, in 1894, was 213,000,000 feet, and shipments for the season were about 180,000,000 feet. This year, if the mills run up to the usual time, the cut will be about 300,000,000 feet. Shipments already have amounted to about 142,000,000 feet, and there are over two full months of navigation left and whatever may come it may be expected that the shipment will be very large.

Ashland and Washburn have increased their cut considerably this year, but have been shipping so much more than in ordinary years that their stocks will probably be about the same at the close of navigation as they were last fall. On the docks of the mills along the south shore of Lake Superior east of Ashland more lumber has been manufactured this year and more will be carried over, in all probability. On the other lakes a different story will be told. At Menominee and Marinette stocks are very low for this period of the year, and little lumber remains in those places which has not been shipped, sold or put under contract. Manistee is well sold out and so are other places on Lake Michigan. The advance in freight rates from Lake Superior points recently has sent buyers to Lake Huron ports in good numbers, and all of them have had active markets while there has been a period of comparative quiet on Lake Superior. Alpena, Cheboygan, Tawas and other points have been shipping lumber very fast, and stocks must be low at those places, with the likelihood that they will be about cleaned out by the close of navigation.

While shipments from Saginaw and Bay City have been slow up to date and sales have not been much better, the market there has become more active within a few weeks, and lumber is moving out faster now. The stocks there may be large, but with the growth of the car trade, which is certain this fall, the surplus lumber there will be well cared for. Outside of Saginaw and Baw City there is not much lumber that can be picked up outside the Lake Superior districts, and if dealers in the distributing markets are to buy much more this fall they must come up here, whatever the lake rates. Stocks, on the whole, to carry over this fall will not be very much, if any, larger than usual, and the result will be if there is not active buying soon the spring demand will be very heavy. Only one thing will prevent a very active buying here in the spring, and that will be the filling of the demand which will come in the winter by rail shipments from interior mills to Chicago and places East.

### STEEL MANUFACTURERS AND SHIPPING

The following editorial from "Seaboard" is reproduced in full on account of the importance of the subject treated including the remarkable figures quoted. The question is one which vitally interests every American manufacturer of steel and will no doubt be acted upon by them in the near future.

"No single industry in the United States has so deep a concern in the rehabilitation of American shipping as have steel manufacturers. This fact is accentuated at the present time, when there is so lasting a rumor and so strong a probability that ships of war will be constructed by American shipbuilders for the Japanese nation. It was illustrated when the Bethlehem Iron Works received an order for several millions of dollars worth of armor for Russian war ships; it was manifested when Charles H. Cramp petitioned the British Admiralty for permission to bid on the construction of war ships for the British navy, on which $100,000,000 is being spent this year. It finds a later manifestation in the placing of an order by the Russian government with a lake shipbuilding company for the construction of three ice-crusher car ferry boats, the machinery for which will be constructed at Detroit. Of what are modern ships, their engines, boilers and appurtenances composed? Steel—all steel. It is merely in the shaping of the steel that shipbuilders are employed. But the steel, from the time it is ore, until it becomes steel plates, angles, channels, beams, tees, shafts, castings, rivets, bolts, is made by our great steel manufacturers.

"A passive interest is all that American steel manufacturers at present show in American shipping, notwithstanding their overshadowing interest in it. Five millions of tons of ships are required to carry our American foreign commerce, annually. Of this we have now under the American flag a half million tons. Last year we constructed 16,000 tons of ships for the foreign trade, and Great Britain built over a million tons. It will necessitate an expenditure of $300,000,000 to build the ships to enable us to carry our own commerce, and $50,000,000 to $100,000,000 to renew and repair them each year after we build them. Why are our steel mannfacturers not aroused, instead of passively favorable, to effect the national legislation that will create a demand for $300,000,000 of their manufacturres at once, and an annual demand for $100,000,000 more thereafter."

Seaboard most earnestly and urgently invites the representative steel manufacturers of the United States to give heed to this subject, and, of themselves, to take some positive affirmative action, to be followed up until successful, looking to the restoration of American shipping to the foreign carrying trade, with an accompanying demand for millions of tons of American steel manufactures of all kinds.

### A FIVE CRANK MARINE ENGINE.

In an article on "The Search after Economy of Fuel in Marine Machinery," by Mr. Thomas Mudd, M. I. N. A., Hartlepool, in the Engineering Review, it is stated that there is a set of machinery now under construction at the Central Marine Engine Works, West Hartlepool, that is intended to put to a practical test, a number of methods that promise to advance the economical performance of the machinery as a whole; a question which is of the most vital importance to the owners of cargo carrying steamers ale over the world.

It would be premature at this time to go very fully into the details, but the principal advanve from present day practice is the adoption of a five-crank engine. The writer's decision on this point is based on several considerations, but principally on the ground that an odd number of cranks is much superior to an even number, and that three are too few for the most advantageous use of very high pressures.

Five cranks, set at equal angles, so as to be in perfect balance and have the shafts readily interchangeable, give no less than ten impulses to the revolution, and should run almost as smoothly as a dynamo Four cranks, on the other hand, set at equal angles, give only four impulses to the revolution, which is the same as the old two-crank engine gave: whereas the three-crank engine gives six impulses.

For a high rate of economy high boiler pressure is essential. But high boiler pressure need not necessarily involve the abandonment as the well-tried and economical multitublar boiler. There are those who appear to believe that higher pressures than those now in use can only be obtained by the adoption of the water-tube boiler; and, as the water-tube boiler has not yet shown itself to be nearly so economical as the ordinary marine boiler, they feel placed between the horns of dilemma.

In the ordinary cargo boat, economy of fuel is the consideration that is paramount, giving place only to questions of safety to life and limb. Till water-tube boilers can evaporate in ordinary work at sea more water per lb of coal than ordinary boilers, it would be useless in the seach after economy to adopt them, only to find that with 250 lbs. pressure we have but an ultimate economy equal to that we now have with 160 lbs.

The water-tube boiler clearly as a mission of its own, and has a special field in which to exercise that mission, but its important point of difference from the cylindrical boiler are such as have no value for a cargo boat, while its inferiority in economy of fuel would still have prevented its adoption in the mercantile marine if it had some other points of real advantage.

In the set of machinery building at the Central Engine Works, therefore, a higher pressure is being adopted—namely, about 260 lbs.—but this is to be provided in ordinary cylindrical multitubular boilers, the aim being to secure all the economy available in the engines from the high pressure, without suffering any drawback from the adoption of a boiler less economical at equal pressure than that now in use.

By these and other means, of which it is premature yet to speak fully, the writer hopes to reduce the expenditure of fuel to a quantity not far away from the much coveted one H. P. for one lb of coal consumed per hour, a desideratum that seems to be certainly within the range of practicability, and one that continues bad times will be sure to spur on the practical engineers of this county to attain.

### THE REGATTA AT TOLEDO.

Yachting makes sailors, and it is with great pleasure THE RECORD announces that one of the largest regattas ever held at the head of lake Erie will occur on Monday next. The race will be open to all yachts on the lakes and from all indications it will be a representative gathering.

The Toledo Yacht club has put up big cash prizes with flags, and yacht appliances.

### TRADE NOTES.

At some service tests of hoisting recently made by Robert Grimshaw and Lieut. John A. Bell at the Brooklyn Navy Yard, it was shown that, when the blocks were lubricated with waterproof graphite grease made by the Joseph Dixon Crucible Co., of Jersey City, a saving of from 30 per cent to 35 per cent was effected in the power over that required by unlubricated blocks.

A handsome excursion steam yacht has just been completed for Wm. Zink & Co., of St. Louis, by the Marine Iron Works of Chicago, in which they have placed one of their 1895 pattern of 8x8 balanced piston valve high speed marine engines. Boiler allowed 165 lbs. working pressure. The yacht is 50 feet long on deck, 10½ feet beam, draws 3 feet of water, has flush deck, and is licensed to carry 75 passengers. Delivery will be made under her own steam via Illinois and Michigan canal and the Illinois and Mississippi Rivers.

The National Lead Co., New York, have issued a pamphlet entitled "Concerning Babbitt or Anti-Friction Metals." It deals with a subject which every man connected with the running of machinery ought to be familiar with. If knowledge concerning the properties and ingredients of soft metals was more wide-spread and accurate than it is, there would be fewer hot bearings, and less money would be paid out for metal that had nothing to recommend it beyond a high-sounding name. Send for this pamphlet.

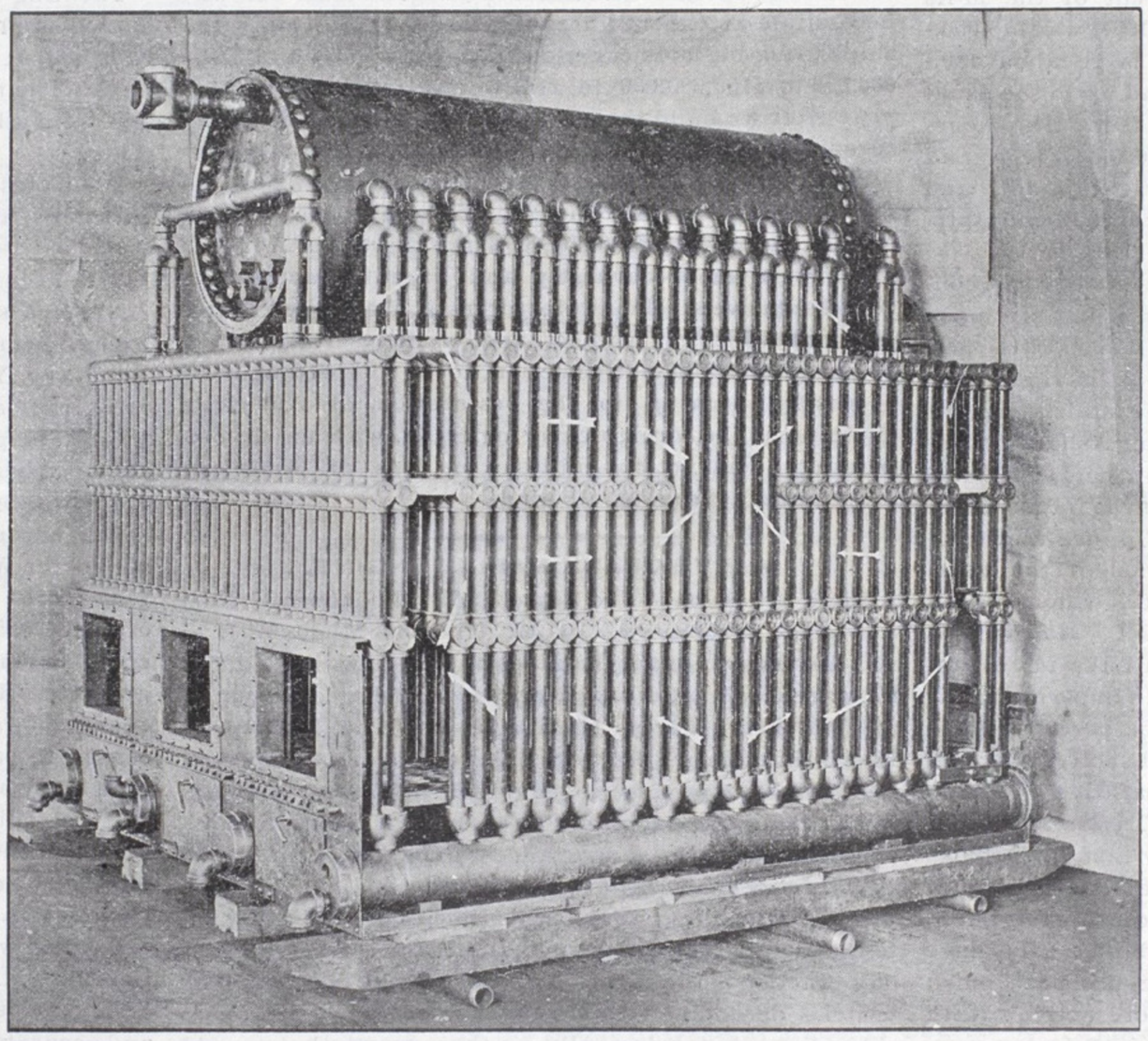
The immense number of worthless powder compounds now on the market indicate, beyond question, the great need of some thoroughly reliable method of preserving steam boilers from the destructive effects of salts which are found in all feed waters. Most of these compounds are solvents of a caustic nature, which are shortly found out to do more injury than good, as any chemical preparation strong enough to remove scale will corrode the iron itself. In this direction the possibilities of entirely new scientific applications are shown in the method now being successfully introduced by the Empire Boiler Cleaning Co., of 19 Whitehall street, New York Their idea is to apply interiorly fine particles of metallic mercury, which by the combined action of heat and pressure dislodge all incrustations and form upon the metal surface a thin enamel coating, to which no further scale can adhere and which thus forms an absolute protection to the tubes and plates. This company has made exhaustive tests of the new process during the past five years, and from the prominence of the engineers and owners whose indorsements it possesses, seems to have effectually solved a difficulty which has in the past time cost the manufacturing and motive industries of the world a mint of money. A full explanation of the discovery is given in a pamphlet which is sent free by the company on application.

## THE TAYLOR SECTIONAL WATER TUBE BOILER.

(ILLUSTRATED.)

The Taylor water tube boiler, illustration of which is shown herewith, is made up almost entirely of upright steel tubing, the tubes being only two feet in length, all connected at the bottom from the first corrugating crown sheet to dome, thereby, it is claimed, reaching the maximum in late practice, for short and rapid circulation. The steam is almost entirely separated from the water in the upper manifolds at the top of the tubes, before entering the dome. It thus furnishes uniformly dry steam. The water line is as steady as in a Scotch marine boiler. The heat, after operating on the first corrugated crown-sheet, through which it cannot pass, passes each way to the ends of the combustion chamber, where it ascends the vertical flue in which is placed a fire brick baffle, which prevents the heat from ascending farther. It then passes horizontally through the first series of upright tubes, under the second corrugated crown sheet, to the center. There the crown sheet is left out, making a flue to the upper or third crown sheet, under which the heat passes horizontally through the upright tubes to the vertical flues at each end. From there the heat goes under the dome and heater pipes (the latter not shown in photograph), to the stack, which is located centrally or at either end as required. There are two large down-flow pipes at the back end of the boiler for return of water to four bottom manifolds, from which arise 128 1¼" pipes to supply the sections with water, there being four pipes to each section, or four rows of 32 each, making three fire holes. The grates are made to revolve so as to be able at any time to clean the fire quickly and easily.

The boiler from which this photograph was taken was put into the steam yacht "Azalea," (125 feet long, 18 feet beam) which has just returned from a trip to the Thousand Islands, a distance of 1,200 miles. During the trip 21 tons of coal was used, the boat being under steam 16 days, but running only by daylight, and part of the time passing through the Welland canal. This boiler occupies about 7 feet square of floor space, and has 1,400 feet of heating surface. It furnishes steam for a triple expansion engine with cylinders, 9¼", 14½" and 24" by 14" stroke, 300 revolutions per minute and maintains a pressure of 200 lbs. The stack is painted white and after traveling more than 2,000 miles, shows no blemish whatever showing that there is no waste heat going through the stack. The boilers are being manufactured by the Detroit Screw Works, Detroit, Mich., who own the patents.



THE TAYLOR SECTIONAL WATER TUBE BOILER.

## TESTS OF ALUMINUM PLATES.

Some months ago two plates of aluminum were sent to the Norfolk Navy Yard to be tested as to their ability to resist the action of salt water. One of them was pure aluminum, weighing 2 pounds 9 ounces; the other contained 6 per cent alloy of copper. They were immersed for forty-five days, and at the end of that time the plate of pure metal was found to be only slightly affected, and the aluminum wire by which it was suspended was perfectly intact. It had lost half an ounce in weight. The alloy plate was found to be corroded and roughened over its entire surface, the wire by which it was suspended was eaten entirely away, and it had gained half an ounce in weight by corrosion.

The plates were again immersed, this time for three months. The report of this test, recently received at the Navy Department, says that the pure plate was slightly roughened over its entire surface, and that there were a few barnacles attached. After being cleaned it was found not to have changed in weight. The alloy plate was found covered with barnacles and corroded to a greater degree than the plate of pure aluminum. It was not weighed.

A practical test was made of aluminum in the construction of small boats by Mr. Walter Wellman, who had three constructed to carry his polar expedition last year. These boats, it was said at the Navy Department, had been brought back to Washington, and an examination made some time ago showed that the material had so deteriorated that it could be easily crumbled in one hand.

## PROTECTION AND SHIPBUILDING.

TWO CANADIAN POINTS OF VIEW.

The New York Tribune says it is by the policy of subsidizing mail steamship lines that Great Britain has built up the greatest mercantile marine in the world. "There is scarcely one British trade route," says The Tribune, "that is not marked from end to end with postal subsidies and other forms of encouragement." The Tribune should know that the policy of protection simply abolished the mercantile marine of the United States, when it promised in a few years, if let alone, to equal that of Britain. The protective tariff frustrates every effort by the United States to artificially force a mercantile marine. With carrying vessels the cost of transportation affords no protection, and the country of tariffs cannot compete with the country of freedom. Anyone seriously intending to embark in shipbuilding would be lacking in natural intelligence if he selected a port where everything required would be taxed a third of its value. The only locations suitable for shipbuilding are those where the world's products may be bought without the intervention of customs authorities. American efforts to establish by artificial aid a mercantile marine while maintaining protection are ridiculous.—Toronto Globe.

The Globe is ignorant. It was not the policy of protection that abolished the mercantile marine of the United States, but the Alabamas and Shenandoahs of the confederacy that swept it from the seas. It is true that at the time of the breaking out of the war of the rebellion the United States possessed a fleet of clipper ships employed in its foreign commerce the equal for fleetness of any sailing under the British flag, but as the United States at that time did not do a tithe of its own carrying trade, and as Britain then as now did a very large proportion of the carrying trade of the world, including the United States, it is difficult to see, as the Globe professes to see, that the United States would, in a few years, if let alone, have equalled Britain in that respect. When the war broke out about all the mercantile marine of the whole world, and most of the war vessels, were constructed of wood. During the time of the war, and to a most important extent stimulated by it, Britain developed an iron shipbuilding industry that placed her much farther in advance of all other nations than she has previously been with her wooden ships; and when the United States emerged from its struggle for national life, it had no mercantile marine whatever with which to again engage in foreign commerce. The ante-bellum point at which the country had arrived, as alluded to by the Globe, where, if let alone, it would soon have equalled Britain in maritime greatness was substantially the same as that prevailing at this time, a strong and important feature of the situation being that no foreign ship could engage in the domestic carrying trade. If reference is had to this domestic trade, then the Globe is far off in its conclusion that the protective tariff of the United States has frustrated any efforts made there to build up a mercantile marine. Under the laws of that country, where the home business was kept strictly in the control of American shipping, a mercantile marine has been built up that is the wonder and the admiration of the whole world. This fact is in evidence to any one who will observe the fleets to American steamers that sail every day from the port of New York to every other port on the Atlantic and Gulf coasts, from Maine to Texas, and to the West Indies and South America countries also; and from San Francisco to all important ports on the Pacific coast, from Alaska to Chili. Of course this traffic with foreign ports is open to the competition of ships of other countries; but it would never have been built up if it had not had the parentage, and if it were not the offshoot of the coastwise carrying trade. But if this salt water traffic is large and important, what is to be said of the marine traffic of the United States upon the Mississippi, Ohio, Missouri and other inland waters, and upon the great unsalted seas that divide that country from Canada. Surely the Globe ought to know that more American tonnage passes through the St. Mary's canal during the half year it is open for navigation than all the tonnage of all nations, including Britain, passing through the Suez canal during the whole year. Surely it ought to know that more American tonnage passes through the port of Detroit during the few months of the year when the Detroit River is open for navigation than arrives and departs from both Liverpool and London during the whole year. The shipbuilding industry is a most valuable and important feature in the welfare of the United States, and many, many millions of dollars are profitably invested in it; and yet the Globe informs us that anyone seriously intending to embark in shipbuilding would be lacking in intelligence if he invested his money in that country where a duty is imposed upon materials entering into the construction of ships; that the only locations suitable for shipbuilding are those where free trade prevails. It may be able to deceive itself, but anyone who has ever been as far as the end of the Yonge street wharf knows that when it says that American efforts to establish a mercantile marine while maintaining protection, are ridiculous, it displays its own ridiculous ignorance.—Canadian Manufacturer, Toronto.

## HARPER'S FOR OCTOBER.

Alone in China, is the striking title of a story by Julian Ralph, which will be a feature of Harper's Magazine for October. This is the first of a series of six Chinese tales by Mr. Ralph, with illustrations by C. D. Weldon, the outcome of travels in the East, which both writer and illustrator undertook at the instance of the publishers of Harper's. As no other country in the world at the present time so stimulates yet baffles curiosity, the light that Mr. Ralph (a keen and trustworthy observer) is to cast upon China, will enhance the value of this series.

To the same number a timely paper on The Future in Relation to American Naval Power, will be contributed by Capt. A. T. Mahan, U. S. N., who advocates a strong navy as a promoter of peace and of American interests, and assails the dogma that the national defence should be the sole purpose of battle-ships.

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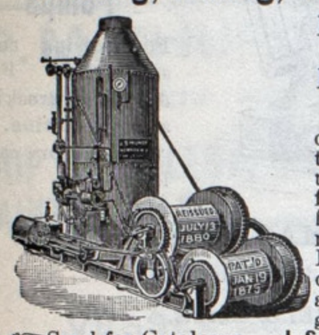

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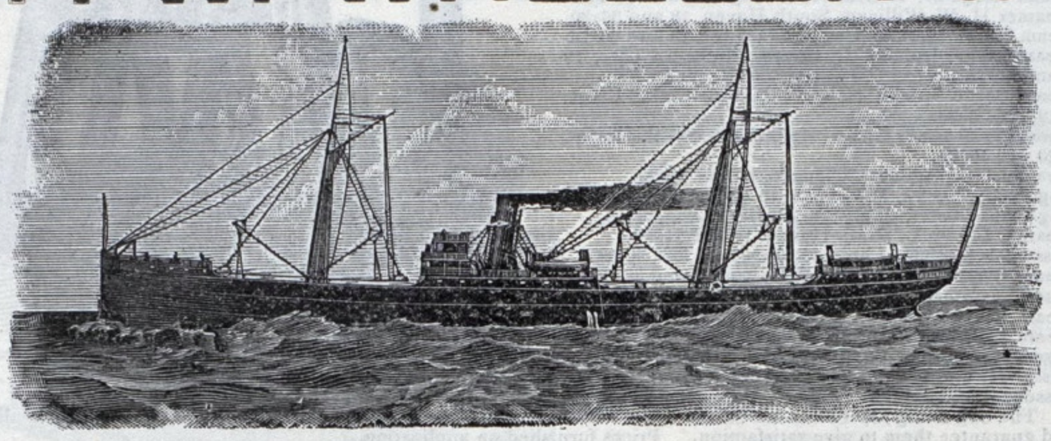

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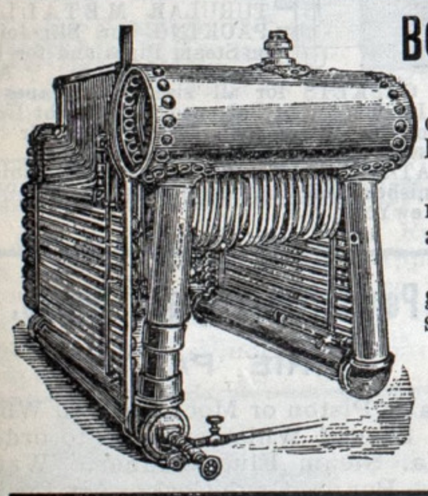

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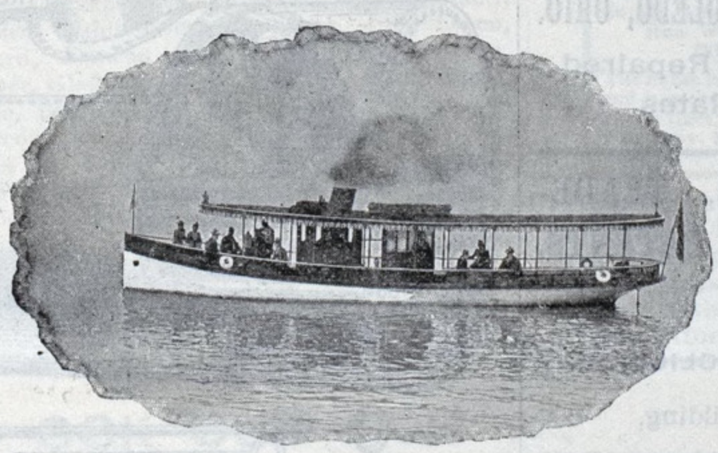

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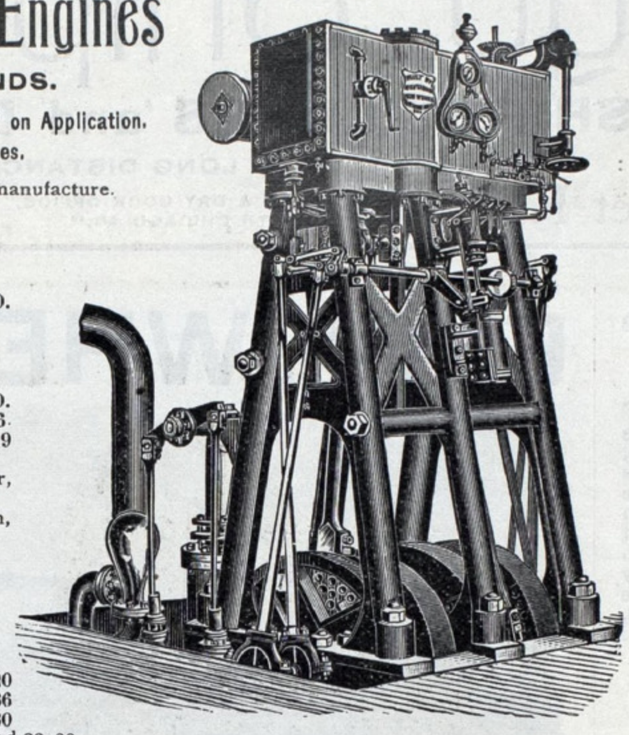

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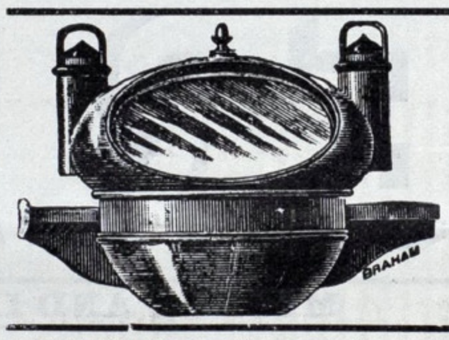


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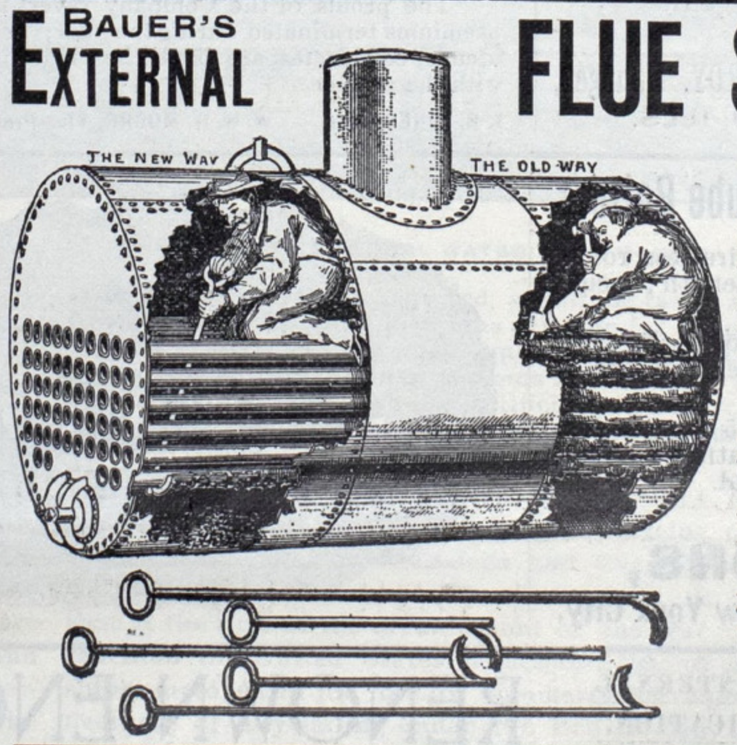


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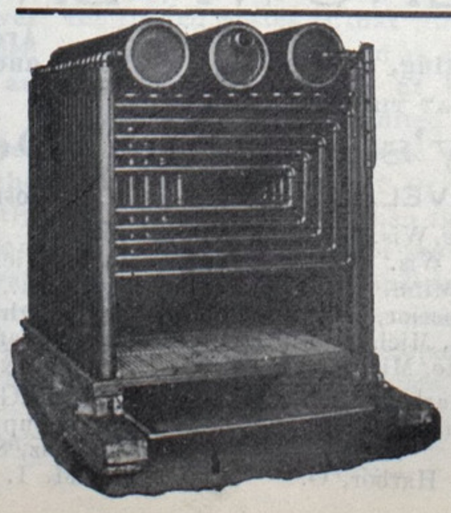

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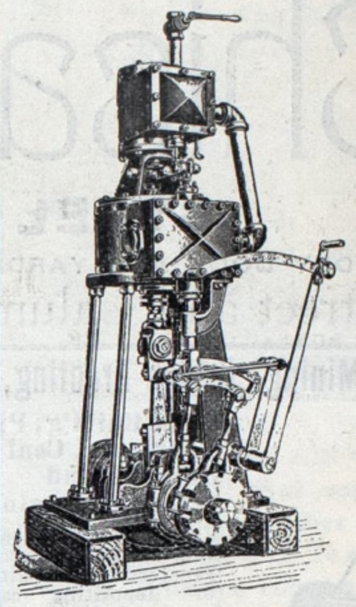

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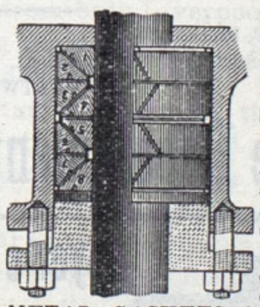

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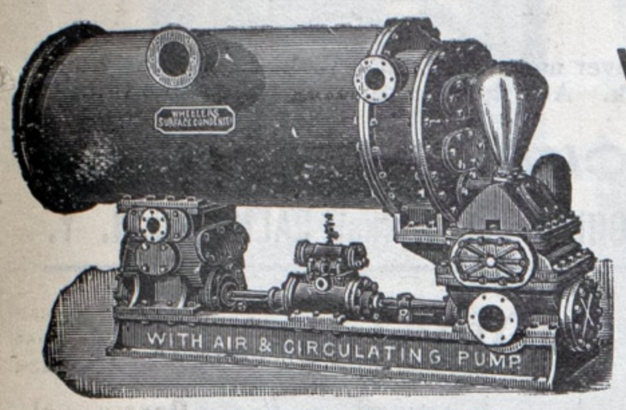


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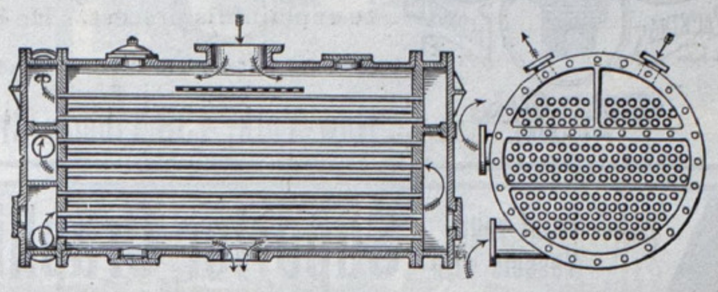

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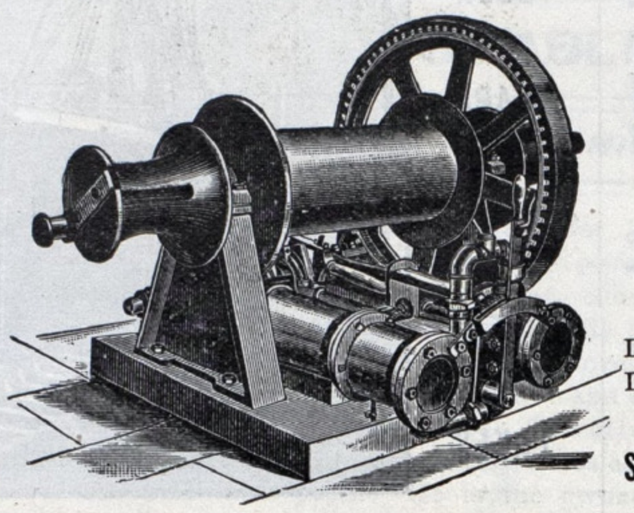

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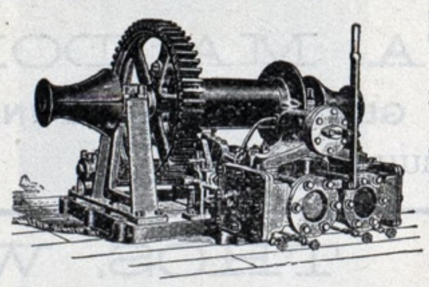

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Our Hoists will be found on the following boats: Tugs—Superior, Sumner, Sweepstakes, Winslow, J. K. Emmett, Acme, Mockingbird, Waldo Avery, Reliance, John Owen, Charlton, Howard, Duncan City, Chamberlain, Balize, Sampson, Westover, Gladiator, W. B. Castile, Home Rule, Robert Weideman, Boscobel and Peter Smith; Propellers—Metamora, Abercom, Penobscot, J. J. McWilliams, I. W. Stephenson, John W. Pauly; Barges—Jenness, Noquebay, Mantanee. Also in use by F. W. Wheeler & Co., W. B. City, Mich., Blood and Hart, Marine City, Mich., Michigan Salt Works, Marine City, Doty Bros,, Pile Drivers, Toronto, Canada.

MARINE IRON CO., - - Bay City, Mich.

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## PROPOSALS.

U. S. ENGINEER OFFICE, Newport, R. I. August 13, 1895. Sealed proposals, in triplicate, for the purchase from the United States of 1 tug, 1 dredge, 1 water boat, 3 dump-scows, and 1 sand-pump complete with boiler, will be received here until 12 o'clock, noon, September 19, 1895, and then opened. Full information furnished on application. W. W. HARTS, 1st Lieut., Corps of Engineers, U. S. A. 34–37

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## Cleveland & Buffalo Transit Company.

**$2.50 CLEVELAND TO BUFFALO.**

VIA "C. & B. LINE."

Magnificent side-wheel steel steamers,

**"State of Ohio" and "State of New York"**

DAILY TIME TABLE.
SUNDAY INCLUDED.

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| Lv. Cleveland, | 6:00 p. m. | Lv. Buffalo, | 6:30 p m. |
| Ar. Buffalo, | 7:30 a m. | Ar. Cleveland, | 7:30 a. m. |

CENTRAL STANDARD TIME.

Take the "C & B. Line" steamers and enjoy a refreshing night's rest when enroute to **Buffalo, Niagara Falls, Toronto, New York, Boston, Albany, 100 Islands**, or any Eastern or Canadian point.

**Cheap Excursions Weekly to Niagara Falls.**

Send 4 cents postage for tourist pamphlet.

W. F. HERMAN, Gen'l Pass. Agent. T. F. NEWMAN, Gen'l Manager.
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Now under construction for this Company the largest side-wheel steamer on the Great Lakes, unsurpassed for speed and elegance, will be ready to go into commission April, 1896.

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REMEMBER the Nickel Plate Road has authorized low rate home-seekers' excursions to points in the West, North-west and South-west on September 10th and 24th. Enquire of agents for particulars.

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**Per Day. $1.50. H. H. JAMES.**

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THE Nickel Plate Road offers a splendid opportunity for visiting the West, North-west and South-west, by authorizing excursion rates to points in that territory, on Sept. 10th and 24th. Ask agents for further information. 385

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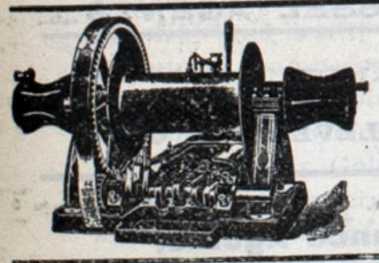

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BUILDER OF DUPLEX HOISTING AND DECK ENGINES.

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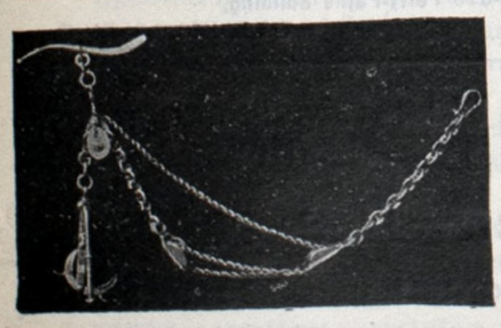

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SOLID GOLD. SHIP-SHAPE IN EVERY DETAIL.

Sheaves work, snatch block opens out and seizings are passed correctly.

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*Send for Descriptive Circular.*

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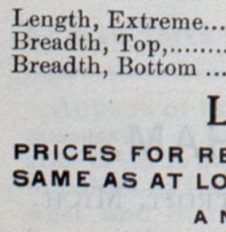

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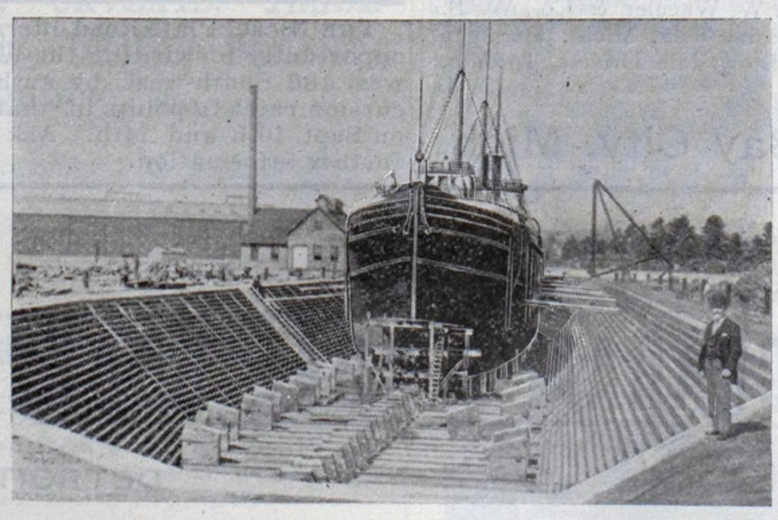

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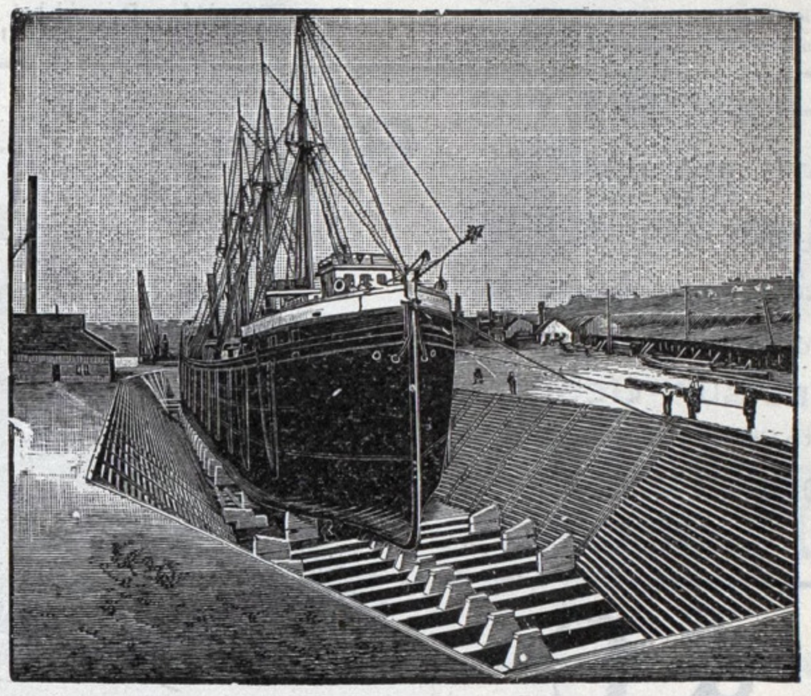

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